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EXAMINER

MACARTHUR, SYLVIA

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/735,771

Applicant(s)

HONGO ET AL.

Examiner

Sylvia R. MacArthur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 and 16-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 16-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Election/Restrictions***

1. Applicant's election without traverse of claims 1-9 and 16-33 in the reply filed on September 7, 2005 is acknowledged.

***Drawings***

2. Figure 19 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Double Patenting***

3. Claims 1-9 and 16-33 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-54 of copending Application No. 10/364,404. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 29 and 38, and 47 are held to a polishing apparatus comprising a substrate holder, a polishing bath with an electrolyte, anodes and cathodes, a power source, and relative movement between the substrate holder and the polishing tool.

Comparatively, the present invention claims an apparatus with a plurality of anodes/cathodes, a power source applying voltage between the anodes and cathodes, and a processing liquid supply section.

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This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

*Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3,5,6, 8, and 26-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Emesh et al(US 2002/0148732).

Emesh et al teaches apparatus for electrochemically depositing a material onto a workpiece.

Regarding claim 1: Emesh et al teaches a substrate holder 202, a plurality of anodes and cathodes opposite the substrate 212 and arranged alternately along at least one direction (see Fig. 5, elements 216 and 224). Emesh et al further teaches a processing liquid supply section, see [0045] and [0049], and a power source 214 applying voltage between the anodes and cathodes.

Regarding claim 2: See [0044] and [0047].

Regarding claim 3: See [0042]

Regarding claims 5,6, and 8: See Fig. 5.

Regarding claim 26: See [0039] and [0044], first rotary plate is the platen.

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Regarding claim 27: The platen and holder both rotate and have separate drivers to do so, such that the apparatus of Emesh et al is inherently capable of rotating the holder and rotary plate in opposite directions.

Regarding claim 28: The apparatus of Emesh et al provides a polishing fluid which is a type of etchant.

6. Claims 16-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al (US 2005/0034999).

Regarding claim 16: Lee et al teaches a substrate holder 580, a processing head 582, a processing liquid supply section (see [0034]), and a plurality of anodes and cathodes (see Fig. 8A) and an ultrasonic transducer 1112. Also see [0095].

Regarding claims 17 and 18: See [0035]

Regarding claim 19: A pulse power source is applied between the anode and cathodes see [0068].

7. Claims 20-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Miyazaki et al (US 6,352,469).

Miyazaki et al teaches a polishing apparatus with slurry screening.

Regarding claim 20: Miyazaki et al teaches a processing liquid supply (line 8), a microbubbler generator (see col. 21 lines 25-43), and an ultrasonic transducer 50.

Regarding claim 21: These limitations are matters of an intended use and a process limitation, the apparatus of Miyazaki et al is inherently capable of providing this size bubbles and operating at the claimed pressure.

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Regarding claim 22: The microbubbler generator comprise a two fluid nozzle distributing air and slurry.

Regarding claims 23 and 24: See Fig. 1.

Regarding claim 25: This is a process limitation and is thus not given patentable weight the apparatus of Miyazaki et al is inherently capable of emitting waves at this frequency.

*Claim Rejections - 35 USC § 103*

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Emesh et al in view of Switzer (US 4,663,004).

The teachings of Emesh et al were discussed above.

Emesh et al fails to teach a rectifier.

Switzer teaches electrochemical conversion using AC and semiconductor electrodes.

The use of a rectifier is discussed in col.3 lines.9-24 and col.4 lines 10-37. Therein,

Switzer teaches that the motivation to use a rectifier in electrochemical processes with wafers is that it provides a means of rectifying ac to dc in a stable, reliable manner. Thus, it would have been obvious for one of ordinary skill in the art of the claimed invention to provide a rectifier to convert ac to dc in a stable, reliable manner that would lead to a more uniform electrochemical product.

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10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Emesh et al as evidenced by Tatsuura et al (US 6,923,892).

The teachings of Emesh et al were discussed above.

Emesh fails to teach that the material of construction for the cathode and anode are conductive diamond or lead dioxide.

Tatsuura et al teaches a method and apparatus of electrodeposition of a film onto a semiconductor wafer. In col.4 lines 63-67, the prior art recites that the electrode are made of metals including lead and their alloys. This prior art shows as evidence that lead is amongst known suitable electrode materials of construction. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide lead dioxide (an alloy of Pb) as a suitable material of construction for the anode/cathodes of Emesh et al.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Emesh et al in view of Shinozuka et al(6,554,204) .

The teachings of Emesh et al were discussed above.

Emesh fails to teach a suction port.

Shinozuka et al teaches a nozzle used to etch an n object. The nozzle is provided with a coaxial structure of supply pipe with a complimentary suction pipe. The motivation to modify the apparatus of Emesh et al to include this nozzle is that it provides for more precise processing, see col.2 lines 29-51. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the processing fluid supply of Emesh et al to include the coaxial pipe structure of Shinozuka et al.

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12. Claims 29-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Emesh et al in view of Taniguchi et al (US 2003/0181141).

The teachings of Emesh et al were discussed above.

Emesh fails to teach 1) a second fluid supply section and 2) a counter plate.

Regarding the second fluid supply section: A duplication of parts was found to have been obvious by In re Harza 274 F.2d 669, 124 USPQ 378 (CCPA 1960). The motivation to provide a second supply section in the apparatus of Emesh et al is that it provides a means of supplying the process with a plurality of processing fluids simultaneously and allowing a mixing or reaction at the point-of use. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a plurality of fluid supply sections.

Additionally, Taniguchi et al teaches a double-sided polisher 10 with a first and second fluid supply section to provide polishing fluid to both surfaces of the wafer. The motivation to provide the apparatus of Emesh et al with dual fluid supply sections is to provide a supply of each of the top and bottom sides of the wafer.

Regarding the counter plate: Upper plate 12 and bottom plate 13 are provided in the prior art by Taniguchi et al. The motivation to provide the apparatus of Emesh et al with the counter plate of Taniguchi et al is to provide a means for double sided processing. Thus, it would have been obvious for one of ordinary skill at the time of the claimed invention in the art to provide the counter plate of Taniguchi et al.

Regarding claims 30, 31, and 33: The counter plate rotates [0099].

Regarding claim 32: Polishing is a form of etching.




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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the core hours of 9 a.m. and 3 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Sylvia R. MacArthur  
Patent Examiner  
Art Unit 1763

November 27, 2005